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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/603,109	06/24/2003	Alfonso Benjamin Amparan	10011341-1	1669

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EXAMINER

WANG, CLAIRE X

ART UNIT PAPER NUMBER

2624

DATE MAILED: 08/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/603,109	<b>Applicant(s)</b> AMPARAN ET AL.	
	<b>Examiner</b> Claire Wang	<b>Art Unit</b> 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 24 June 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |                                                                                                                                                 |                                                                                         |
|-------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                                                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                                            | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>06/24/2003</u> . | 6) <input type="checkbox"/> Other: _____                                                |

## **DETAILED ACTION**

### ***Claim Objections***

1. Claims 12 and 20 are objected to because of the following informalities:

In line 1 of claim 4, the word "the" should be removed.

In line 3 of claim 12 the word "animage" is incorrect.

In line 1 of claim 20 the word "mage" is incorrect.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

2. MPEP 2173.03, Inconsistency between claims and specification disclosure of prior art, inasmuch as it relates to the "specification disclosure", states:

"Although the terms of a claim may appear to be definite, inconsistency with the specification disclosure or prior art teachings may make an otherwise definite claim take on an unreasonable degree of uncertainty. In re Cohn, 438 F.2d 989, 169 USPQ 95 (CCPA 1971); In re Hammack, 427 F.2d 1378, 166 USPQ 204 (CCPA 1970). In Cohn, the claim was directed to a process of treating a surface with a corroding solution until the metallic appearance is supplanted by an "opaque" appearance. Noting that no claim may be read apart from and independent of the supporting disclosure on which it is based, the court found that the description definitions and examples set forth in the specification relating to the appearance of the surface after treatment were inherently inconsistent and rendered the claim indefinite."

3. Claims 3, 13 and 19 are rejected under 35 U.S.C. 112 first paragraph, as failing to comply with inconsistency between claims and specification disclosure.

Claim 3 states: "the peripheral point is located at a peripheral area of the beam spot closer to the beam axis than the other comparable peripheral areas of the beam spot." This is in contradiction with Fig. 5A of the specification, where the peripheral point (48) is located further away from the beam axis.

As to claims 13 and 19, they have the same issue as claim 3. Note the discussion above.

### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 2, 8, 11, 12 and 18 are rejected under 35 U.S.C. 102 (b) as being anticipated by Bilodeau et al. (US 5,465,152).

As to claim 1, Bilodeau et al. (from this point forward will be referred to as Bilodeau) teaches a method of topographically mapping a surface (Col. 4 lines 9-13), comprising: directing a radiation beam (light source 14, which is a laser according to the specifications) toward a target location (specific x, y position, Col. 3 lines 57-58) on the surface (object, 10). Bilodeau also teaches capturing an image of a beam spot (spot is imaged with optics, Col. 3 line 64) at a location in an image plane intersecting at least a portion of the radiation beam reflected from the target location on the surface (Fig. 4).

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Also, identifying at least one image plane coordinate for a peripheral point of the beam spot image (the light sensors give the location of the beam spot. Since the peripheral point is a point within the beam spot, it is then logical to know the location of the peripheral point. Col. 3 lines 64-67; Col. 4 lines 4-6). Bilodeau further teaches assigning a relative height value (height, Col. 4 lines 4-7) to the target location based on a mapping of the at least one image plane coordinate identified for the peripheral beam spot point to the relative height value (Col. 4 lines 4-7).

As to claim 2, Bilodeau teaches wherein the radiation beam is directed along a beam axis (see beam coming out from light source 14 along the z-direction; Fig. 4) and an image plane coordinate (Col. 3 lines 64-67) is identified with respect to a first direction substantially parallel to a projection of the beam axis onto the image plane (Fig. 4).

As to claim 8, Bilodeau teaches wherein the surface forms a boundary of a substrate (17) and is semitransparent (partially transparent; Col. 4 lines 23-24) with respect to the radiation beam.

As to claim 9, Bilodeau teaches wherein the substrate is a printed circuit board (Col. 2 lines 65-67).

As to claim 11, it is the system claim of claim 1. Note the discussion above.

As to claim 12, it is the system claim of claim 2. Note the discussion above.

As to claim 18, it is a computer program (the calibrated processing electronics (13) are used to calculate the height and store the height with its associated target

location. A computer program must be present in order for this process to be completed; Col. 4 lines 7-9) of claim 1. Note the discussion above.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 4, 5, 6, 7, 9, 10, 14, 15, 16, 17 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bilodeau et al. (US 5,465,152) in view of Svetkoff et al. (US 5,812,269).

As to claim 4, Bilodeau teaches wherein identifying the at least one image plane coordinate (specific x-y position with in an image plane; Bilodeau Col. 3 lines 56-66). However, Bilodeau does not teach applying a threshold to pixel values of the beam spot image. Svetkoff teaches of applying threshold in a triangulation-based system to inspect solder joints using laser spot (Svetkoff Col. 7 lines 17-24). Therefore, the method of applying threshold to laser spot reads on the claimed applying a threshold to pixel values. It would have been obvious to one ordinarily skilled in the art to combine Bilodeau's image plane with Svetkoff's threshold because applying the threshold can optimize the estimation for different imaging and measurement applications (Svetkoff Col. 7 lines 17-24).

As to claim 5, Svetkoff teaches matching of gray scale with height data. Where the gray scale values are within a pre-set threshold (Svetkoff Col.12 lines 28-33). (Svetkoff Col. 7 lines 44-46). Therefore, Svetkoff's gray scale threshold reads on the claimed "grayscale threshold". Thus, it would have been obvious to one ordinarily skilled in the art to combine Svetkoff's gray scale threshold with Bilodeau's image plane because it allows the 3D imaging and processing to be more reliable (Svetkoff Col. 7 lines 41-46).

As to claim 6, Svetkoff teaches after the gray scale value is within a predetermined threshold value then uses the gray scale value to have access to a look-up table that contains one-to-one correspondence for z-data, or height value (Svetkoff Col. 11 lines 58-62). This reads on the claimed "predetermined relative height value". Therefore, it would have been obvious to one ordinarily skilled in the art to combine Svetkoff's look-up table with Bilodeau's image plane because it allows easy access to pre-load decision rules with little impact on processing time (Svetkoff Col. 12 lines 1-5).

As to claim 7, Svetkoff teaches after the gray scale value is within a predetermined threshold value then uses the gray scale value to have access to a look-up table that contains one-to-one correspondence for z-data, or height value (Svetkoff Col. 11 lines 58-62). This reads on the claimed "lookup table". Therefore, it would have been obvious to one ordinarily skilled in the art to combine Svetkoff's look-up table with Bilodeau's image plane because it allows easy access to pre-load decision rules with little impact on processing time (Svetkoff Col. 12 lines 1-5).

As to claim 14, it is the system of claim 5. Note the discussion above.

As to claim 15, it is the system of claim 4. Note the discussion above.

As to claim 16, it is the system of claim 6. Note the discussion above.

As to claim 17, it is the system of claim 7. Note the discussion above.

As to claim 20, it is the computer program (the calibrated processing electronics (Bilodeau 13) are used to calculate the height and store the height with its associated target location. A computer program must be present in order for this process to be completed; Bilodeau Col. 4 lines 7-9) of claim 4. Note the discussion above.

8. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bilodeau et al. Svetkoff et al. as applied to claims 1, 8-9 above, and further in view of Roder (US 6,490,368 B2).

As to claim 10, note the discussion of Bilodeau and Svetkoff above. Both Bilodeau and Svetkoff do not teach Roder teaches of triangular mesh pattern for surface mapping. Roder teaches of laser surface mapping using the form of triangular mesh (Roder Figs. 4A-4C) pattern. This reads on the claimed "directing, capturing, identifying, and assigning for a plurality of target location on the surface of the printed circuit board arranged in a prescribed triangular mesh pattern." Therefore, it would have been obvious to one ordinarily skilled in the art to combine Bilodeau's mapping system as modified by Svetkoff with Roder's triangular mesh pattern mapping because it is used to help to identify the solder joints on the circuit board (Roder Col. 16 lines 9-17).



***Conclusion***

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Pryor et al. (US 5,510,625) teaches of a method to electro optically determine the dimension, location and attitude of objects.

Liu et al. (US 5,859,924) teaches of a method and system for measuring object features.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Claire Wang whose telephone number is 571-270-1051. The examiner can normally be reached on 5/4/9.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chanh Nguyen can be reached on 571-272-7222. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Claire Wang  
08/04/2006

  
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SUPERVISORY PATENT EXAMINER